STM-1 Optical to STM-1 Electrical Converter

Data Sheet & Product Brochure

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Product Overview

Valiant's STM-1 Optical to STM-1 Electrical converter provides a simple and cost-effective conversion between STM-1 optical interface and STM-1 electrical interface. STM-1 Optical to STM-1 Electrical converter is an interface conversion equipment supplied with one STM-1 electrical (75 Ohms BNC) interface and one STM-1 optical (MSA compliant SFP) interface.

1+1, STM-1 Optical to STM-1 Electrical converter option is also offered and available.

STM-1 Optical to STM-1 Electrical converter is a compact solution housed in a 1U high (44mm), 19-inch rack-mountable shelf, which can be installed in any DIN-standard 19-inch rack.

This unit offers three power supply options. Options for the power supply to the equipment include:

a) Dual DC -48V Inputs (range -18V DC ~ -72V DC), for power input redundancy.
b) Single AC 110V AC to 240V AC, 50 / 60 Hz Inputs.
c) Single -48V DC (range -18V DC ~ -72V DC) Input.

Features

- 1+0, STM-1 Optical to STM-1 Electrical converter version.
- Dual (1+1), STM-1 Optical to STM-1 Electrical converter version.
- Standard 75 BNC connector of the STM-1 electrical interface.
- 19 inch, 1U (44mm) rack mounting chassis .
- Standard MSA compliant SFP optical interface. Allows installation of field removable / field upgradable optical SFPs.
- Short haul (1310nm), long haul (1550nm) and multi mode (850nm) optical SFP modules offered.
- Offers multiple distance SFP options on the optical link 2KM, 15KM, 40KM, 80KM, 120KM, 150KM, 200KM and 260KM.
- Management options:
  - Serial RS232 Port (COM Port).
  - USB interface (COM Port).
  - 10/100 BaseT Ethernet Port allows the equipment to be remotely accessed using Telnet over a TCP-IP Network.
  - SNMP V2 monitoring.
  - Network Management System - Windows XP and Windows 7 compatible Network Management System (NMS).
- High reliability, complies to ITU-T G.703 and G.957.
- State-of-the-art design. Industrial Grade Temperature specifications - ensures normal working under difficult environments.
- Low power consumption.
- Supports local and remote loop-back on electrical or optical interfaces for system diagnostics.
- Simple operation and maintenance.
- 75 Ohms (BNC connector) compliant with ITU-T G.703 and Telcordia GR-253 155Mbps electrical interfaces
- ITU-T G.783 compatible loss of signal detect.

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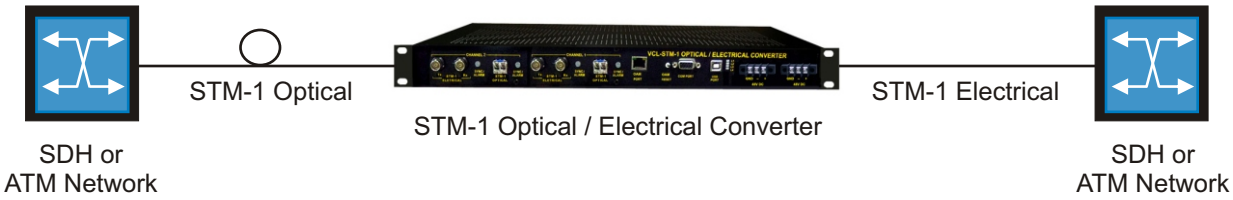
Features

- STM-1 Electrical Interface - handles over 12.7dB of cable loss.
- SFP - LC optical interface.
- Hot-pluggable SFPs.
- SFP with DDMI Interface - for read back of transmit and received optical power.
- Class 1 laser safety.
- Compliant with ITU-T G.957 STM-1.

Application Diagram



Compliance

G.703	Provides one standard STM-1 electrical interface complying with G.703
G.707	Network node interface for the synchronous digital hierarchy (SDH)
G.781	Structure of Recommendations on equipment for the Synchronous Digital Hierarchy (SDH)
G.782	Types and characteristics of Synchronous Digital Hierarchy (SDH) equipment
G.783	Characteristics of Synchronous Digital Hierarchy (SDH) equipment functional blocks
G.813	Timing characteristics of SDH equipment slave clocks (SEC)
G.825	Control of Jitter and Wander within Digital Networks Which are Based on the Synchronous Digital Hierarchy (SDH)
G.957	Provides one standard STM-1 optical interface complying with G.957
G.958	Digital line systems based on the Synchronous digital hierarchy for use on optical fiber cables

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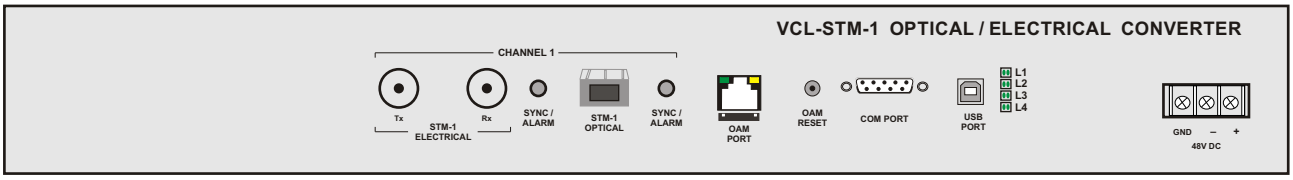
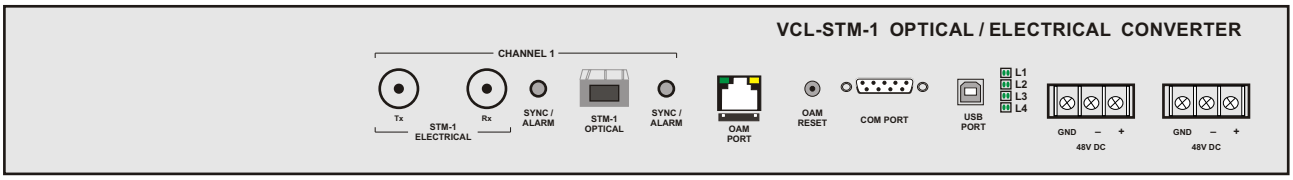
Front View

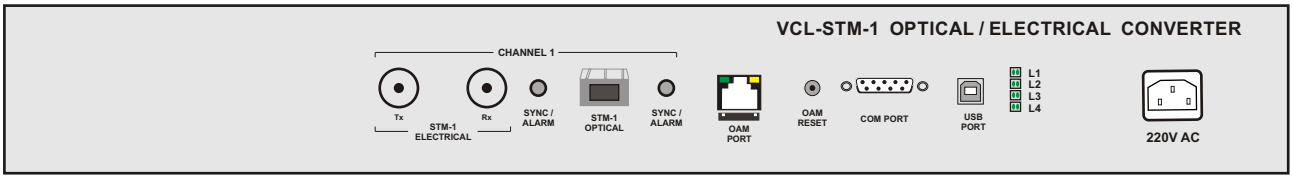
Single Channel DC Version



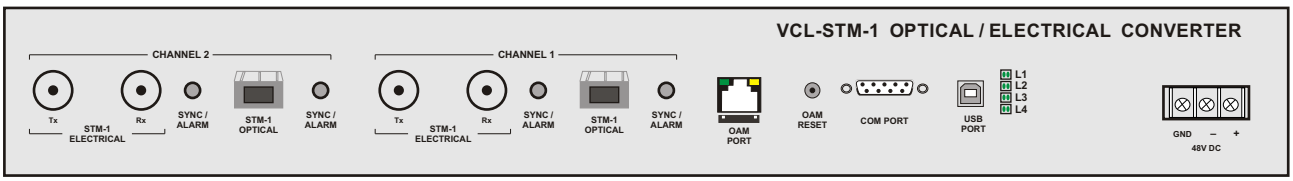
Single Channel Dual DC Version



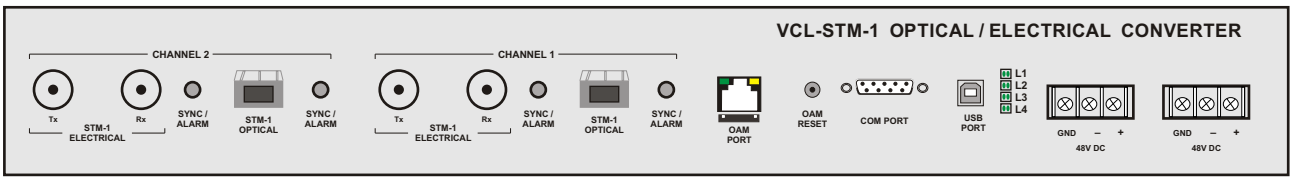
Single Channel AC Version



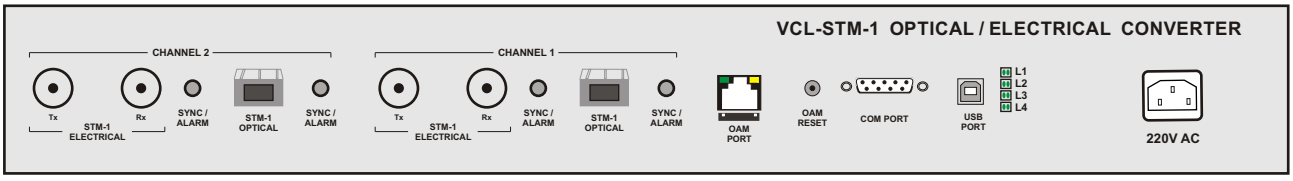
Dual Channel Single DC Version



Dual Channel Dual DC Version



Dual Channel Single AC Version



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Technical Specifications

STM-1 Electrical Interface

Data Rate	155.52 Mbps
Standard	ITU-T G.703 Compliant
Impendence	75 Ohms resistive
Peak to peak voltage (signal)	1 $\pm$ 0.1 V
Rise time between 10% and 90% amplitudes of the measured steady state amplitude	$\leq$ 2 ns
Maximum Attenuation	12.7dB at 78MHz
Jitter	As per ITU-T G.825
Line Code	CMI
Physical Connector	BNC Coaxial

STM-1 Optical Interface

Data Rate	155.52 Mbps
Standard	ITU-T G.957 STM-1
Coding	NRZ
Connector	LC
Light source	Laser Diode
Wave length options	850nm / 1310nm / 1550nm
Transmission type	Dual Fiber (standard) Single Fiber Bi-directional (optional)
Automatic Laser Shut Down Option	Provided - User selectable option
Transmit power	As per SFP used
Receive sensitivity	As per SFP used

Alarms

- LOS (Loss of Signal).
- AIS (All Ones Alarm).
- Optical Power Input High Alarm.
- Optical Power Input Low Alarm.
- SNMP V2 Traps.

Loop-backs

- STM-1 Electrical local loop-back.
- STM-1 Electrical remote loop-back.
- STM-1 Optical local loop-back.
- STM-1 Optical remote loop-back.

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System Access, Control and Management Options:

Telnet
CLI Control Interface (HyperTerminal or VT100)
Windows XP and Windows 7 based GUI (Graphical User Interface)
SNMP V2

OAM: Operation And Management Ports

RS232 Serial Port
USB COM Port
10/100BaseT Ethernet for Telnet and SNMP

Security and Protection

- Secured Access via SSH V2
- Password Protection: Password Protection in compliance with the mandatory clauses of the GR-815-CORE-2 specifications for secured access control
- Security Audit: All access logs for up to 30 days are maintained for security audit purposes
- Logging: Maintains a log of all successful and un-successful attempts. Logged information includes the ID and the IP address of the accessing entities. Alerts the administrator if the un-successful logging attempts exceed 5.

Power Supply

Input voltage	- Dual DC -48V Inputs (range -18V DC ~ -72V DC) - Single AC 110V AC to 240V AC, 50 / 60 Hz Inputs - Single -48V DC (range -18V DC ~ -72V DC) Input
Power consumption	$\leq$ 6 W (1+0 version) $\leq$ 8 W (1+1 version)

Environmental

Working temperature	-0^{0}C ~ +50^{0}C for operation
Relative humidity	< 95% (Non condensing)
Altitude	Sea level to 5000 meters

Mechanical Specification

Rack Mounting	Standard 19 Inch. DIN Rack
Height	44 mm.
Depth	260 mm.
Width	480 mm.
Weight	3.4 kgs

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Ordering Information

S. No.	Part #	STM-1 O/E (Common Equipment)
1	VCL-STM-1-10-OE-1479-AC-WLWL-DKM	STM-1 Optical / Electrical converter (1+0) 19-inch 1U High Rack Mount Version Includes : - 1 x STM-1 electrical interface (155 Mbps, 2xBNCF Coaxial) - 1 x STM-1 optical interface (SFP based - without SFP) - 1 x SFP to be ordered separately - 1 x 100-240V AC Power Supply Input - 1 x System Core Cables, Installation accessories, Documentation, System User Manual, System User Manual Disk etc (Set) - Optical Patch Cord Connectorized Cable [LC-LC, 03m] - Connector Optical Attenuator [LC-LC, 20db] - SNMP V2
2	VCL-STM-1-11-OE-1479-AC-WLWL-DKM	STM-1 Optical / Electrical converter (1+1) 19-inch 1U High Rack Mount Version Includes : - 2 x STM-1 electrical interface (155 Mbps, 2xBNCF Coaxial) - 2 x STM-1 optical interface (SFP based - without SFP) - 2 x SFP to be ordered separately - 1 x 100-240V AC Power Supply Input - 1 x System Core Cables, Installation accessories, Documentation, System User Manual, System User Manual Disk etc (Set) - Optical Patch Cord Connectorized Cable [LC-LC, 03m] - Connector Optical Attenuator [LC-LC, 20db] - SNMP V2
3	VCL-STM-1-10-OE-1479-DC-WLWL-DKM	STM-1 Optical / Electrical converter (1+0) 19-inch 1U High Rack Mount Version Includes : - 1 x STM-1 electrical interface (155 Mbps, 2xBNCF Coaxial) - 1 x STM-1 optical interface (SFP based - without SFP) - 1 x SFP to be ordered separately - 1 x -48V DC Power Supply Input - 1 x System Core Cables, Installation accessories, Documentation, System User Manual, System User Manual Disk etc (Set) - Optical Patch Cord Connectorized Cable [LC-LC, 03m] - Connector Optical Attenuator [LC-LC, 20db] - SNMP V2

Notes:

WLWL = SFP Wavelength 0850, 1310 or 1550 in nm

DKM = SFP Distance in Km, 002, 015, 040, 080, 120, 150, 200, 260

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Ordering Information

S. No.	Part #	STM-1 O/E (Common Equipment)
4	VCL-STM-1-11-OE-1479-DC-WLWL-DKM	STM-1 Optical / Electrical converter (1+1) 19-inch 1U High Rack Mount Version Includes : - 2 x STM-1 electrical interface (155 Mbps, 2xBNCF Coaxial) - 2 x STM-1 optical interface (SFP based - without SFP) - 2 x SFP to be ordered separately - 1 x -48V DC Power Supply Input - 1 x System Core Cables, Installation accessories, Documentation, System User Manual, System User Manual Disk etc (Set) - Optical Patch Cord Connectorized Cable [LC-LC, 03m] - Connector Optical Attenuator [LC-LC, 20db] - SNMP V2
5	VCL-STM-1-10-OE-1479-DCR-WLWL-DKM	STM-1 Optical / Electrical converter (1+0) 19-inch 1U High Rack Mount Version Includes : - 1 x STM-1 electrical interface (155 Mbps, 2xBNCF Coaxial) - 1 x STM-1 optical interface (SFP based - without SFP) - 1 x SFP to be ordered separately - 2 x -48V DC Power Supply Input [1+1] - 1 x System Core Cables, Installation accessories, Documentation, System User Manual, System User Manual Disk etc (Set) - Optical Patch Cord Connectorized Cable [LC-LC, 03m] - Connector Optical Attenuator [LC-LC, 20db] - SNMP V2
6	VCL-STM-1-11-OE-1479-DCR-WLWL-DKM	STM-1 Optical / Electrical converter (1+1) 19-inch 1U High Rack Mount Version Includes : - 2 x STM-1 electrical interface (155 Mbps, 2xBNCF Coaxial) - 2 x STM-1 optical interface (SFP based - without SFP) - 2 x SFP to be ordered separately - 2 x -48V DC Power Supply Input [1+1] - 1 x System Core Cables, Installation accessories, Documentation, System User Manual, System User Manual Disk etc (Set) - Optical Patch Cord Connectorized Cable [LC-LC, 03m] - Connector Optical Attenuator [LC-LC, 20db] - SNMP V2

Notes:

WLWL = SFP Wavelength 0850, 1310 or 1550 in nm

DKM = SFP Distance in Km, 002, 015, 040, 080, 120, 150, 200, 260

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Ordering Information

S. No.	Part #	SFP Description	Wave Length	Distance
1	VCL-EMOD-0262	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Duplex LC, MMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	850nm	2Km
2	VCL-EMOD-0193	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Fast Ethernet, S-1.1, Duplex LC, SMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1310nm	15Km
3	VCL-EMOD-0194	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.1, Duplex LC, SMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1310nm	40Km
4	VCL-EMOD-0217	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.2, Duplex LC, SMF, +3.3V, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	80Km
5	VCL-EMOD-0156	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, LR-2/LR-3, Fast Ethernet L-1.2, Duplex LC, SMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	120Km
6	VCL-EMOD-0243	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, L-1.2, Duplex LC, SMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	150Km
7	VCL-EMOD 0171	155Mbps SFP Transceiver SDH/STM-1 L-1.2, Duplex LC, SMF, +3.3V, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	200Km
8	VCL-EMOD 0244	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.2, Duplex LC, SMF, +3.3V, DDM, Internal Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	260Km

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Ordering Information

S. No.	Part #	Cables & Accessories
1	Patch Cord	Optical Patch Cord Connectorized Cable (3 Meters) (Two Patch Cords for each STM-1 Port)
2	Patch Cord	Optical Patch Cord Connectorized Cable (10 Meters) (Two Patch Cords for each STM-1 Port)
3	Attenuator	Connector (Optical Attenuator) (One Optical Attenuator for each STM-1 Port)

Technical specifications are subject to changes without notice.
Revision 2.6 - March 04, 2014

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